



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/576,755	08/09/2006	Yoshiaki Sonobe	Q94473	6031
23373	7590	09/06/2007	EXAMINER	
SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037			HARRIS, GARY D	
ART UNIT		PAPER NUMBER		
1773				
MAIL DATE		DELIVERY MODE		
09/06/2007		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>
	10/576,755	SONOBE ET AL.
	<b>Examiner</b>	<b>Art Unit</b>
	Gary D. Harris	1773

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 8/9/06.
- 2a) This action is **FINAL**.                                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) \_\_\_\_\_ is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-9 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) All    b) Some \* c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) Notice of Informal Patent Application
- 6) Other: \_\_\_\_\_.

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 & 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Kikitsu et al. US 2003/0017364.

As to Claim 1, Kikitsu et al. '364 discloses a perpendicular in plane combination magnetic recording medium utilized on hard disk drives (Paragraph 3, 34). Including a recording layer and a functional layer. The deposition condition for the recording layer permitted a large amount of an intergranular substance to enter, the recording layer keeps epitaxial continuity with the functional layer, and independent crystal growth is controlled in the recording layer (Paragraph 52). Ferromagnetic material is used in the functional layer in order to further control magnetization materials and can be selected from a wider range than that of the recording layer (Paragraph 69). Materials may be alloyed with at least one element selected from Fe and Ni. Alternatively, it is also acceptable to add to those metals or alloys an additive for improving the magnetic property, which include silicon (Si), or the like, or a compound of any of these elements and at least one element selected from oxygen (O), nitrogen (N), carbon (C) and hydrogen (H) (Paragraph 74). In regards to the layer containing a Co

Kikitsu et al. '364

discloses a wide range including, beside those materials mentioned above, other alloys of rare earth materials and transition metals, such as Tb--Fe, Tb--Fe--Co, Tb--Co, Gd--Tb--Fe--Co, Gd--Dy--Fe--Co, Nd--Fe--Co and Nd--Tb--Fe--Co, multi-layered films of magnetic layers and noble metal layers (such as Co layer /Pt layer and Co layer/Pd layer) and magnetic oxides (Paragraph 68). For reasons stated above, Kikitsu et al. '364 encompass claim.

As to Claim 5, Kikitsu et al. '364 discloses a spacer layer between the functional layer and the recording layer and encompass claim (Paragraph 132).

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2 - 4, 6 - 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kikitsu et al. '364.

As to Claim 2, 3, 4, 7 & 8, Kikitsu et al. '364 discloses a recording layer can be made of magnetic grains. Advantageous materials of the magnetic grains are those having a large saturation magnetization and a large magnetic anisotropy. From this

viewpoint, usable as a magnetic metal material is at least one metallic material selected from the group consisting of, for example, cobalt (Co, platinum (Pt), samarium (Sm), iron (Fe), nickel (Ni), chromium (Cr), manganese (Mn), bismuth (Bi), aluminum (Al) and alloys of these metals (Paragraph 66). The magnetic layer comprising minute magnetic grains. The boundaries of the magnetic domains should be smooth enough, and this results in the reduction of the size of the magnetic grains (Paragraph 4). A multi-layered film of magnetic substances (Co, Ni, Fe and their alloys) and nonmagnetic substances (including Si and their alloys or oxides) (Paragraph 78). Kikitsu et al. '364 does not disclose the ferromagnetic layer having Si in an amount of 6 atomic percent or more. However, it would have been obvious to one skilled in the art to optimize the oxide percentage in order to optimize magnetically separating the magnetic. Additionally, this is a known process in the art that is processed using a technique used for manufacturing semiconductors, such as lithography, di-block copolymers, or processing by ion beam irradiation (Paragraph 126). .

As to Claim 6, Kikitsu et al. '364 discloses all layers were formed consecutively without breaking the vacuum (Paragraph 337). However, the condition of (sputtering gas/pressure) was adjusted but, does not disclose an Argon gas atmosphere lower than the pressure used when forming the ferromagnetic layer. However, this would be an obvious adjustment to one of ordinary skill in the art in order to control the size of the magnetic crystal grains (Paragraph 124) as taught by Kikitsu et al. '364.

As to Claim 9, Kikitsu et al. '364 discloses a spacer layer between the functional layer and the recording layer and encompass claim (Paragraph 132).

***Conclusion***

Please note that paragraph numbers are cited for convenience. However, the document disclosed needs to be considered entirely.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US 6881497 B2, US 6777112 B1, US 7235314 B2.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gary D. Harris whose telephone number is 571-272-6508. The examiner can normally be reached on 8AM - 5PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carol D. Chaney can be reached on 571-272-1284. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

GH



CAROL CHANEY  
SUPERVISORY PATENT EXAMINER